

WHAT IS CLAIMED IS:

- 1 1. An apparatus for aerating soil, comprising:
2 first and second shafts rotatably coupled to a carrier, the first and second shafts being
3 substantially parallel and being spaced apart by a separation distance;
4 a first set of soil aeration tines attached to the first shaft, each tine in the first set
5 rotating in one of a first set of rotation planes; and
6 a second set of soil aeration tines attached to the second shaft, each tine in the second
7 set rotating in one of a second set of rotation planes, wherein none of the second set of
8 rotating planes overlap any of the first set of rotating planes.
- 1 2. The apparatus of claim 1, wherein each tine in the first set of aeration tines extends
2 radially from the first shaft to a distance greater than one-half the separation distance and
3 each tine in the second set extends radially from the second shaft to a distance greater
4 than one-half the separation distance.
- 1 3. The apparatus of claim 1, further comprising a support shaft rigidly coupled to the carrier
2 along a central axis of the carrier.
- 1 4. The apparatus of claim 3, wherein the first shaft is offset from the support shaft such that
2 the first set of tines is operable to revolve about the first shaft without interference from
3 the support shaft.
- 1 5. The apparatus of claim 3, wherein the second shaft is offset from the support shaft such
2 that the second set of tines is operable to revolve about the second shaft without
3 interference from the support shaft.
- 1 6. The apparatus of claim 1, wherein the soil aeration tines are operative to penetrate and
2 remove a portion of soil from a ground surface.
- 1 7. The apparatus of claim 1, wherein each aerating tine comprises a cutting tube coupled to
2 a blade portion.

1 8. A soil aerator, comprising:

2 a frame adapted to be coupled to a vehicle which transmits a pulling force from the
3 vehicle to the frame; and

4 a soil aeration apparatus mounted to the frame such that the frame is operable to
5 transport the soil aeration apparatus over a ground surface, the soil aeration apparatus having
6 a plurality of arcuate aeration blades attached to a tine-holder shaft;

7 wherein the plurality of arcuate aeration blades are operable to penetrate the ground
8 surface at substantially the same time to form a plurality of aeration pockets, and

9 wherein the arcuate aeration blades are operable to penetrate the ground so as to
10 produce a downward force urging the frame toward the ground.

1 9. The soil aerator of claim 8, wherein the frame is coupled to the vehicle by a one-point
2 hitch member.

1 10. The soil aerator of claim 8, wherein the soil aeration apparatus is operable to aerate soil
2 without the provision of positive ballast or an externally applied downward force.

1 11. An apparatus for aerating soil, comprising:

2 first and second holding means coupled to a carrier, the first and second holding
3 means extending axially from the carrier in substantially parallel relation and being offset by
4 a separation distance;

5 a first soil fracturing means attached to the first holding means, the first soil
6 fracturing means extending radially from the first holding means to a distance greater than
7 one-half the separation distance; and

8 a second soil fracturing means attached to the second holding means, the second soil
9 fracturing means extending radially from the second holding means to a distance greater than
10 one-half the separation distance;

11 wherein the first soil fracturing means is staggered relative to the second soil
12 fracturing means such the first soil fracturing means is operable to revolve about the first
13 holding means without interference from second soil fracturing means.

- 1 12. The apparatus of claim 11, wherein the first and second soil fracturing means are
2 operative to penetrate and remove a portion of soil from a ground surface.
- 1 13. The apparatus of claim 11, wherein the first and second soil fracturing means comprise
2 soil aerating tines having tubes, blades, spikes, or a combination thereof.
- 1 14. The apparatus of claim 13, wherein each aerating tine comprises a cutting tube coupled to
2 a blade portion.
- 1 15. The apparatus of claim 13, wherein the first soil fracturing means comprises a first set of
2 aeration tines, each aeration tine extending radially from the first holding means.
- 1 16. The apparatus of claim 15, wherein the second soil fracturing means comprises a second
2 set of aeration tines, each aeration tine extending radially from the second holding means.
- 1 17. The apparatus of claim 11, wherein the first holding means comprises a first tine rack and
2 the second holding means comprises a second tine rack.